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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,427	07/18/2003	Pratik Desai	CM03763J	4071
7590 Scott M. Garrett Motorola, Inc. Law Department 8000 West Sunrise Boulevard Fort Lauderdale, FL 33322			EXAMINER SWERDLOW, DANIEL	
			ART UNIT	PAPER NUMBER
			2615	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		02/01/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/623,427

Applicant(s)

DESAI ET AL.

Examiner

Daniel Swerdlow

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,6,9-19,24,27-36,42,44-52 and 57-67 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,6,9-19,24,27-36,42,44-52 and 57-67 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 15 November 2006 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1, 6, 9 through 12, 14 through 19, 24 through 30, 32 through 42, 44 through 46, 48 through 52, 57 through 61 and 63 through 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Urbanski (US Patent 5,668,871) in view of Robinson (US Patent 5,544,242).**

4. Regarding Claim 1, Urbanski discloses a hands-free radiotelephone set (i.e., speakerphone operation in a communications device) (column 6, lines 47-50) comprising: a reverse voice detector (Fig. 3, reference 314; column 9, lines 3-8) that corresponds to the first voice activity detector claimed and communicates with a reverse path (Fig. 3, reference 248) that

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corresponds to the inbound path claimed and generates a voice detect signal (Fig. 3, reference 340) that corresponds to the first voice data claimed and is based on the reverse (i.e., inbound) path signal (Fig. 9, steps 907-911; column 13, lines 15-47; column 15, lines 22-26); a forward voice detector (Fig. 3, reference 318; column 8, lines 34-39) that corresponds to the second voice activity detector claimed and communicates with a forward path (Fig. 3, reference 256) that corresponds to the outbound path claimed and generates a voice detect signal (Fig. 3, reference 333) that corresponds to the second voice data claimed and is based on the forward (i.e., outbound) path signal (Fig. 9, steps 907-911; column 13, lines 15-47); an audio signal processor (Figs. 2-3, reference 209; column 8, lines 9-22) that corresponds to the processor claimed and controls attenuators (i.e., arbitrates control) (Fig. 3, reference 305, 307; column 8, lines 39-42; column 9, lines 20-24) in the reverse path (Fig. 3, reference 248) that corresponds to the inbound path claimed and the forward path (Fig. 3, reference 256) that corresponds to the outbound path claimed based on whether or not voice is present in both paths (i.e., the first data and the second voice data) (column 9, lines 9-20). Therefore, Urbanski anticipates all elements of Claim except the arbitration being based on comparing the first voice data to a threshold based on the second voice data. Robinson discloses a speakerphone control circuit (Fig. 1, reference 28; column 2, lines 65-67) that sets the gain of a transmit channel that corresponds to the inbound path claimed and a receive channel that corresponds to the outbound path claimed (i.e., arbitrates control) (column 2, lines 55-64). Robinson further discloses that the control is based upon a comparison of the receive level RX that corresponds to the first voice data signal claimed and a dynamic threshold that is a variable multiple (i.e., based on) the transmit signal level (TX) that corresponds to the second voice data claimed (Fig. 2; column 3, lines 4-12, 21-32). Robinson

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further discloses that such an arrangement provides sophisticated control without complexity (column 1, line 66-column 2, line 5). It would have been obvious to one skilled in the art at the time of the invention to apply the dynamic threshold comparison-based arbitrating control taught by Robinson to the hands-free radiotelephone set taught by Urbanski for the purpose of realizing the aforesaid advantages.

5. Regarding Claim 6 Urbanski further discloses the communication device being a cellular telephone (column 5, lines 25-28).

6. Regarding Claim 9, Urbanski further discloses selective exclusive path attenuation of (i.e., awarding control to the inbound or outbound path) based on the combination of presence of voice on the paths (i.e., comparison of first voice data and second voice data) (Fig. 13; column 15, lines 57-60).

7. Regarding Claim 10, Urbanski further discloses a wireless communications channel (Fig. 2, reference 121; column 5, lines 43-48).

8. Regarding Claim 11, Urbanski further discloses a microphone input transducer (Fig. 2, reference 201) coupled to the reverse path (Fig. 3, reference 248) that corresponds to the inbound path claimed and receiving a voice signal generated by a user (column 6, lines 49-52).

9. Regarding Claim 12, Urbanski further discloses a speaker output transducer (Fig. 2, reference 201) coupled to the forward path (Fig. 3, reference 256) that corresponds to the outbound path claimed reproducing a calling parties voice (column 7, lines 18-19).

10. Regarding Claim 14, Urbanski further discloses an echo canceller (Fig. 3, reference 303; column 8, lines 53-65).

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11. Regarding Claim 15, Urbanski further discloses an A/D converter (Fig. 2, reference 205; column 6, lines 52-55) that corresponds to the encoder claimed in the reverse path (Fig. 3, reference 248) that corresponds to the inbound channel claimed.

12. Regarding Claim 16, Urbanski further discloses a D/A converter (Fig. 2, reference 207; column 6, lines 58-60) that corresponds to the decoder claimed in the forward path (Fig. 3, reference 256) that corresponds to the outbound channel claimed.

13. Regarding Claim 17, Urbanski further discloses an interface to a transmitter (Fig. 2, reference 215; column 6, lines 60-63) that corresponds to the modem transmitter module claimed.

14. Regarding Claim 18, Urbanski further discloses an interface to a receiver (Fig. 2, reference 217; column 7, lines 7-9) that corresponds to the modem receiver module claimed.

15. Claims 19, 24, 27 through 30 and 32 through 36 are essentially similar to claims 1, 6, 9 through 12 and 14 through 18, respectively, and are rejected on the same grounds.

16. Regarding Claim 42, Urbanski discloses a hands-free radiotelephone set (i.e., speakerphone operation in a communications device) (column 6, lines 47-50) comprising: a reverse voice detector (Fig. 3, reference 314; column 9, lines 3-8) that corresponds to the first voice activity detector claimed and communicates with a reverse path (Fig. 3, reference 248) that corresponds to the inbound path claimed and generates a voice detect signal (Fig. 3, reference 340) that corresponds to the first voice detection signal claimed and is based on whether the signal is greater than a threshold that corresponds to the first voice threshold claimed (Fig. 9, steps 907-911; column 13, lines 15-47; column 15, lines 22-26); a forward voice detector (Fig. 3, reference 318; column 8, lines 34-39) that corresponds to the second voice activity detector

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claimed and communicates with a forward path (Fig. 3, reference 256) that corresponds to the outbound path claimed and generates a voice detect signal (Fig. 3, reference 333) that corresponds to the second voice detection signal claimed and is based on whether the signal is greater than a threshold that corresponds to the second voice threshold claimed (Fig. 9, steps 907-911; column 13, lines 15-47); an audio signal processor (Figs. 2-3, reference 209; column 8, lines 9-22) that corresponds to the processor claimed and controls attenuators (Fig. 3, reference 305, 307; column 8, lines 39-42; column 9, lines 20-24) in the reverse path (Fig. 3, reference 248) that corresponds to the inbound path claimed and the forward path (Fig. 3, reference 256) that corresponds to the outbound path claimed based on whether or not voice is present in both paths (i.e., a comparison of the first voice detection signal and the second voice detection signal) (column 9, lines 9-20). Urbanski further discloses the voice detect signal (Fig. 3, reference 340) that corresponds to the first voice detection signal claimed is a binary (i.e., assertable) signal (column 9, lines 3-8) and the voice detect signal (Fig. 3, reference 333) that corresponds to the second voice detection signal claimed is a binary (i.e., assertable) signal (column 8, lines 34-39). Urbanski further discloses the voice detect signal (Fig. 3, reference 340) that corresponds to the first voice detection signal claimed is generated by comparing the signal energy to a threshold (Fig. 9, steps 902, 907-911; column 13, lines 15-47; column 15, lines 22-26) that corresponds to the first voice threshold claimed and the voice detect signal (Fig. 3, reference 333) that corresponds to the second voice detection signal claimed is generated by comparing the signal energy to a threshold (Fig. 9, steps 902, 907-911; column 13, lines 15-47) that corresponds to the second voice threshold claimed. Therefore, Urbanski anticipates all elements of Claim except the arbitration being based on comparing the first voice data to a threshold based on the second

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voice data. Robinson discloses a speakerphone control circuit (Fig. 1, reference 28; column 2, lines 65-67) that sets the gain of a transmit channel that corresponds to the inbound path claimed and a receive channel that corresponds to the outbound path claimed (i.e., arbitrates control) (column 2, lines 55-64). Robinson further discloses that the control is based upon a comparison of the receive level RX that corresponds to the first voice data signal claimed and a dynamic threshold that is a variable multiple (i.e., based on) the transmit signal level (TX) that corresponds to the second voice data claimed (Fig. 2; column 3, lines 4-12, 21-32). Robinson further discloses that such an arrangement provides sophisticated control without complexity (column 1, line 66-column 2, line 5). It would have been obvious to one skilled in the art at the time of the invention to apply the dynamic threshold comparison-based arbitrating control taught by Robinson to the hands-free radiotelephone set taught by Urbanski for the purpose of realizing the aforesaid advantages.

17. Regarding Claim 44, Urbanski further discloses comparison based on whether or not voice is present in both paths (i.e., testing for the assertion of the of the first voice detection signal and the second voice detection signal) (column 9, lines 9-20).

18. Regarding Claim 45, Urbanski further discloses attenuation of only the forward path (i.e., awarding control to the inbound path) when voice is detected on the reverse path only (i.e., when the first voice present signal is asserted and the second voice present signal is not asserted) (Fig. 13, present state REVERSE; column 15, lines 57-60).

19. Regarding Claim 46, Urbanski further discloses attenuation of only the reverse path (i.e., awarding control to the outbound path) when voice is detected on the forward path only (i.e.,

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when the first voice present signal is not asserted and the second voice present signal is asserted) (Fig. 13, present state FORWARD; column 15, lines 57-60).

20. Regarding Claim 48, Urbanski further discloses attenuation of only the reverse path (i.e., awarding control to the outbound path) when voice is detected on the forward path and the reverse path (i.e., when the first voice present signal is asserted and the second voice present signal is asserted) (Fig. 13, present state BOTH; column 15, lines 57-60).

21. Regarding Claim 49, Urbanski further discloses looking up the threshold in a table (i.e., adjusting the threshold) based on the presence of voice (i.e., the comparison of the first voice detection signal and the second voice detection signal) (Fig. 9, steps 903-907; column 12, lines 57-63; column 15, lines 22-26).

22. Regarding Claim 50, Urbanski further discloses looking up the threshold in a table (i.e., adjusting the threshold) based on the presence of voice (i.e., the second voice detection signal) (Fig. 9, steps 903-907; column 12, lines 57-63; column 15, lines 22-26).

23. Regarding Claim 51, Urbanski further discloses adding a noise factor to the threshold (i.e., multiplying by a scale factor) based on the presence of voice (i.e., the second voice detection signal) (Fig. 9, step 907; column 12, lines 57-63; column 15, lines 22-26).

24. Regarding Claim 52, Urbanski further discloses initiating thresholds based on lookup tables (i.e., predetermined computations) (Fig. 13; column 15, lines 57-60).

25. Regarding Claim 57, Urbanski further discloses the communication device being a cellular telephone (column 5, lines 25-28).

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26. Regarding Claim 60, Urbanski further discloses a microphone input transducer (Fig. 2, reference 201) coupled to the reverse path (Fig. 3, reference 248) that corresponds to the inbound path claimed and receiving a voice signal generated by a user (column 6, lines 49-52).

27. Regarding Claim 61, Urbanski further discloses a speaker output transducer (Fig. 2, reference 201) coupled to the forward path (Fig. 3, reference 256) that corresponds to the outbound path claimed reproducing a calling parties voice (column 7, lines 18-19).

28. Regarding Claim 63, Urbanski further discloses an echo canceller (Fig. 3, reference 303; column 8, lines 53-65).

29. Regarding Claim 64, Urbanski further discloses an A/D converter (Fig. 2, reference 205; column 6, lines 52-55) that corresponds to the encoder claimed in the reverse path (Fig. 3, reference 248) that corresponds to the inbound channel claimed.

30. Regarding Claim 65, Urbanski further discloses a D/A converter (Fig. 2, reference 207; column 6, lines 58-60) that corresponds to the decoder claimed in the forward path (Fig. 3, reference 256) that corresponds to the outbound channel claimed.

31. Regarding Claim 66, Urbanski further discloses an interface to a transmitter (Fig. 2, reference 215; column 6, lines 60-63) that corresponds to the modem transmitter module claimed.

32. Regarding Claim 67, Urbanski further discloses an interface to a receiver (Fig. 2, reference 217; column 7, lines 7-9) that corresponds to the modem receiver module claimed.

33. **Claims 13, 31 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Urbanski in view of Robinson and further in view of McCaslin et al. (US Patent 5,668,794).**

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34. Regarding Claims 13, 31 and 62, as shown above apropos of Claims 1, 19 and 42, respectively, the combination of Urbanski and Robinson makes obvious all elements except a comfort noise generator generating comfort noise at selected times based on the voice activity signals. McCaslin discloses a variable gain echo suppressor that injects white noise into a transmission path (i.e., generates comfort noise) in accordance with the setting of a signal attenuator (i.e., at selected times based on the voice activity signals) (Fig. 23; column 26, lines 48-58). McCaslin further discloses that such an arrangement provides relief from annoying background noise variations (column 26, lines 28-36). It would have been obvious to one skilled in the art at the time of the invention to apply comfort noise generation, as taught by McCaslin to the combination made obvious by Urbanski and Robinson for the purpose of realizing the aforesaid advantage.

35. **Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Urbanski in view of Robinson and further in view of Li (US Patent 5,612,996).**

36. Regarding Claim 47, as shown above apropos of Claim 42, the combination of Urbanski and Robinson makes obvious all elements except awarding control to the inbound path when the first voice present signal is asserted and the second voice present signal is asserted. Li discloses a speakerphone gain processing system that increases receive gain (i.e., awards control to the inbound path) in a doubletalk situation (i.e., when the first voice present signal is asserted and the second voice present signal is asserted) (Fig. 3; steps 314, 332; column 9, lines 25-37). Li further discloses that such an arrangement provides substantially increased stability in speakerphone operation when used in conjunction with an echo canceller (column 9, lines 53-

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57). It would have been obvious to one skilled in the art at the time of the invention to apply inbound path control during doubletalk, as taught by Li to the combination made obvious by Urbanski and Robinson for the purpose of realizing the aforesaid advantage.

Response to Arguments

37. Applicant's arguments with respect to all claims have been considered but are moot in view of the new ground(s) of rejection. As shown in the prior art rejections above, Robinson provides teaching and motivation for the limitations added by amendment.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Swerdlow whose telephone number is 571-272-7531. The examiner can normally be reached on Monday through Friday between 7:30 AM and 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh H. Tran can be reached on 571-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Daniel Swerdlow
Primary Examiner
Art Unit 2615

ds
30 January 2007